

Listing of the Claims

1. (Currently Amended) A method of manufacturing an electronic component comprising at least one n-or p-doped portion, comprising the steps of:

5 co-depositing inorganic semi-conducting nanoparticles as a solid in liquid suspension and dopant on a substrate, the nanoparticles comprising a group four element such as silicon or germanium;

fusing in situ on the substrate the nanoparticles by heating to form a continuous layer through a physical change of melting; and subsequently;

10 recrystallizing the layer.

2. (Currently Amended) The method of claim 1, wherein the recrystallizing step generates a continuous polycrystalline layer of doped semi-conducting material.

15 3. (Currently Amended) The method of claim 1, wherein the nanoparticles have an average diameter in the range of 3-120 nanometer[[e]]s.

4. (Currently Amended) The method of claim 1, wherein the step of fusing and/or recrystallizing is carried out in a reducing atmosphere.

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5. (Original) The method of claim 4, wherein the reducing atmosphere comprises approximately 2% hydrogen.

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6. (Previously Amended) The method of claim 4, wherein the reducing atmosphere comprises an inert gas, such as argon.

7. (Previously Amended) The method of claim 1, wherein the step of fusing is carried out using one or more first laser pulses.

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8. (Currently Amended) The method of claim 1, wherein the step of recrystallizing is carried out using one or more second laser pulses, subsequent to the first laser pulses.

9. (Currently Amended) The method of claim 1, wherein the fusing step and/or the recrystallization step is carried out in an oven or the like.

5 10. (Currently Amended) The method of claim 9, wherein in the recrystallization step, the fused nanoparticles are cooled under predetermined conditions to cause recrystallization.

11. (Previously Amended) The method of claim 1, wherein the nanoparticles are deposited in a suspension of a carrier fluid.

10 12. (Currently Amended) The method of claim 11, wherein the carrier fluid comprises a dispersion agent, which stabilizes the nanoparticles in suspension.

15 13. (Original) The method of claim 12, wherein the dispersion agent is a non-ionic surfactant such as polyethylene glycol (MW 200).

20 14. (Previously Amended) The method of claim 11, wherein the nanoparticles are deposited in an inkjet printing process, or a digital offset printing process, or other digital printing process.

25 15. (Previously Amended) The method of claim 11, wherein at least one dimension of the area on the substrate to be occupied by the nanoparticles is selected using a prior step of printing.

16. (Previously Amended) The method of claim 15, wherein the printing step is a soft contact lithographic printing process.

30 17. (Previously Amended) The method of claim 15, wherein the printing process is arranged to deposit a material on the substrate, which limits the position of the carrier fluid when deposited on the substrate through hydrophilic/hydrophobic interaction.

18. (Previously Amended) The method of claim 17, wherein the material is paraffin wax dissolved in toluene or a similar hydrophobic material.

19. (Currently Amended) The method of claim 1, wherein the recrystallized continuous structure forms the source, or drain, or gate region of a transistor, or a component of a p-n, n-p, p-n-p, or n-p-n junction.

20. (Previously Amended) The method of claim 1, wherein the electronic component is a transistor, or capacitor, or a diode.

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21. (Cancelled).

22. (Currently Amended) A method of manufacturing an electronic component comprising at least one n-or p-doped portion, comprising the steps of:

15 co-depositing discrete nanoparticles of semi-conducting material as a solid in liquid suspension with a dopant on a substrate;

fusing in situ on the substrate the nanoparticles with one or more first laser pulses through a physical change of melting to form a[[n]] continuous structure; and subsequently;

20 recrystallizing the continuous structure with one or more second laser pulses.

23. (Original) The method of claim 22, wherein the nanoparticles are substantially inorganic materials.

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24. (Previously Amended) The method of claim 22, wherein the nanoparticles are of a group four elements, such as silicon or germanium.

25. (Currently Amended) The method of claim 22, wherein the nanoparticles have 30 an average diameter in the range of 3-120 nanometer[[e]]s.

26. (Currently Amended) The method of claim 22, wherein the duration of melting of the particles during the fusing step is longer than the duration of melting of the continuous structure during the recrystallized step.

27. (Currently Amended) The method of claims 22, wherein the step of fusing or recrystallizing is carried out in a reducing atmosphere.

5 28. (Original) The method of claim 27, wherein the reducing atmosphere comprises approximately 2% hydrogen.

29. (Original) The method of claim 28, wherein the reducing atmosphere comprises an inert gas, such as argon.

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30. (Previously Amended) The method of claim 22, wherein the electronic component is a transistor, a capacitor, or a diode.

claims 31-62 (Cancelled).

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63. (Previously amended) The method of claim 22, wherein the deposited nanoparticles comprise nanoparticles formed of both a first semiconducting material and a second semiconducting material.

20 64. (Original) A method according to claim 63, wherein substantially all of the deposited nanoparticles comprise both the first and the second semiconducting material.

Claims 65-67 (Cancelled).

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68. (Currently amended) A method according to claim 22, wherein the deposited nanoparticles are of a first material and the substrate comprises a recrystallized film of a second material.

30 Claims 69-70 (Cancelled).

71. (Currently amended) A method according to claim 68, wherein the substrate is formed in a previous step, comprising the sub-steps: depositing nanoparticles on a further substrate; causing the nanoparticles to fuse and recrystallize to form a recrystallized film or layer.

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Claims 72-73 (Cancelled).

74. (Previously amended) An electronic component, or a component thereof manufactured using the method of claim 1.

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75. (Original) A heterojunction bipolar transistors according to claim 74.

Claims 76-88 (Cancelled).

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